*S. waltoni* is known only from the type locality. Probably it exists also in other slides in West Doubtful Canyon as well as in slides in the nearby Doubtful Canyon and Little Doubtful Canyon. It probably evolved from a common ancestor of *S. h. peloncillensis* and *S. caeruliflumininis* through geographical isolation and genetic drift.

It is named after Munroe L. Walton, an eminent malacologist and friend, who has searched for and collected *Sonorella* for over 20 years and who first located the type population of this species.

Literature Cited

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## FOUR NEW SPECIES OF LAND SNAILS

By LESLIE HUBRICHT

Glyphyalinia rimula, new species. Figure 1, A-C.

Shell small, strongly depressed, pale coppery (when fresh), glossy, thin and translucent, spire very low conoid. Whorls 4.5 to 5, well rounded, gradually and uniformly increasing except for more rapid expansion on last half of last whorl, sutures moderately impressed. Sculpture of rather widely spaced radial furrows (34 distinct furrows on last whorl of holotype), very faint spiral sculpture visible in places at a magnification of 30x. Aperture lunate; lip thin, sinuous, with a tongue-like callus at the columellar end which partially covers the umbilicus. Umbilicus rimate.

Height 3.4 mm., diameter 7.7 mm., aperture height 3.0 mm., aperture width 4.0 mm., 4.5 whorls. Holotype.

Animal pale gray. Penis cylindrical, moderately stout; clearly separated into an apical and basal chamber. The apical chamber about one-fourth the length of the penis. Retractor short and stout, attached a little below the end of the penis. Epiphallus about one-half as long as the penis, sessile, attached to the base of the apical chamber, very stout, enlarged towards the distal end, distal end about twice the diameter of the penis. Vagina

very short. Free oviduct about one-half as long as the penis. Spermatheca ovoid, duct about twice as long as the spermatheca and about half as wide.

*Distribution: Tennessee:* Clay Co.: cedar woods, 2 miles southeast of Celina. Overton Co.: river bluff, 3.7 miles east of Alpine. Cannon Co.: in Tenpenny Cave, 2 miles northwest of Woodbury (Stewart B. Peck & Alan Fiske, colls.) holotype 156937, paratypes 156938, Field Museum of Natural History, other paratypes 36847 collection of the author; in Henpeck Mill Cave, 1.7 miles northeast of Woodbury (Peck & Fiske, colls.).

*Glyphyalinia rimula* appears to be most closely related to *Glyphyalinia solida* (H. B. Baker). The shell differs in that the tongue-like callus does not completely cover the umbilicus. Anatomically it differs notably in the presence of a small extension of the penis beyond the retractor and in the shape of the epiphallus.

GLYPHYALINIA LATEBRICOLA, **new species.** Fig. 1, D-F.

Shell small, strongly depressed, nearly transparent with a whitish wash, glossy, spire very low conoid. Whorls 5 to 5.5, well rounded, gradually and uniformly increasing, sutures moderately impressed. Sculpture of radial furrows (55 distinct furrows on last whorl of holotype), and distinct spiral striae visible under 30x magnification. Aperture lunate; lip thin, sinuous, with a tongue-like callus at the columellar end which partially covers the umbilicus. Umbilicus rimate. Base of shell deeply impressed around the umbilicus.

Height 3.1 mm., diameter 6.3 mm., aperture height 2.4 mm., aperture width 2.9 mm., 5.3 whorls. Holotype.

Animal nearly white, with some black flecking on the back. Penis claviform, stout; retractor short and stout, attached below the end of the penis. Epiphallus about one-half as long as the penis, very stout, the distal end bifurcate with the vas deferens attached to the end of one of the lobes; epiphallus attached to the penis opposite the insertion of the retractor and a little below it. Vagina short. Free oviduct about one-half as long as the penis. Spermatheca ovoid, duct a little longer than the spermatheca and the same width.

*Distribution: Alabama:* Madison Co.: on the undersides of stones, base of Burwell Mtn., east of Jeff, holotype 156939, paratypes 156940 F.M.N.H., other paratypes 35336 collection of the

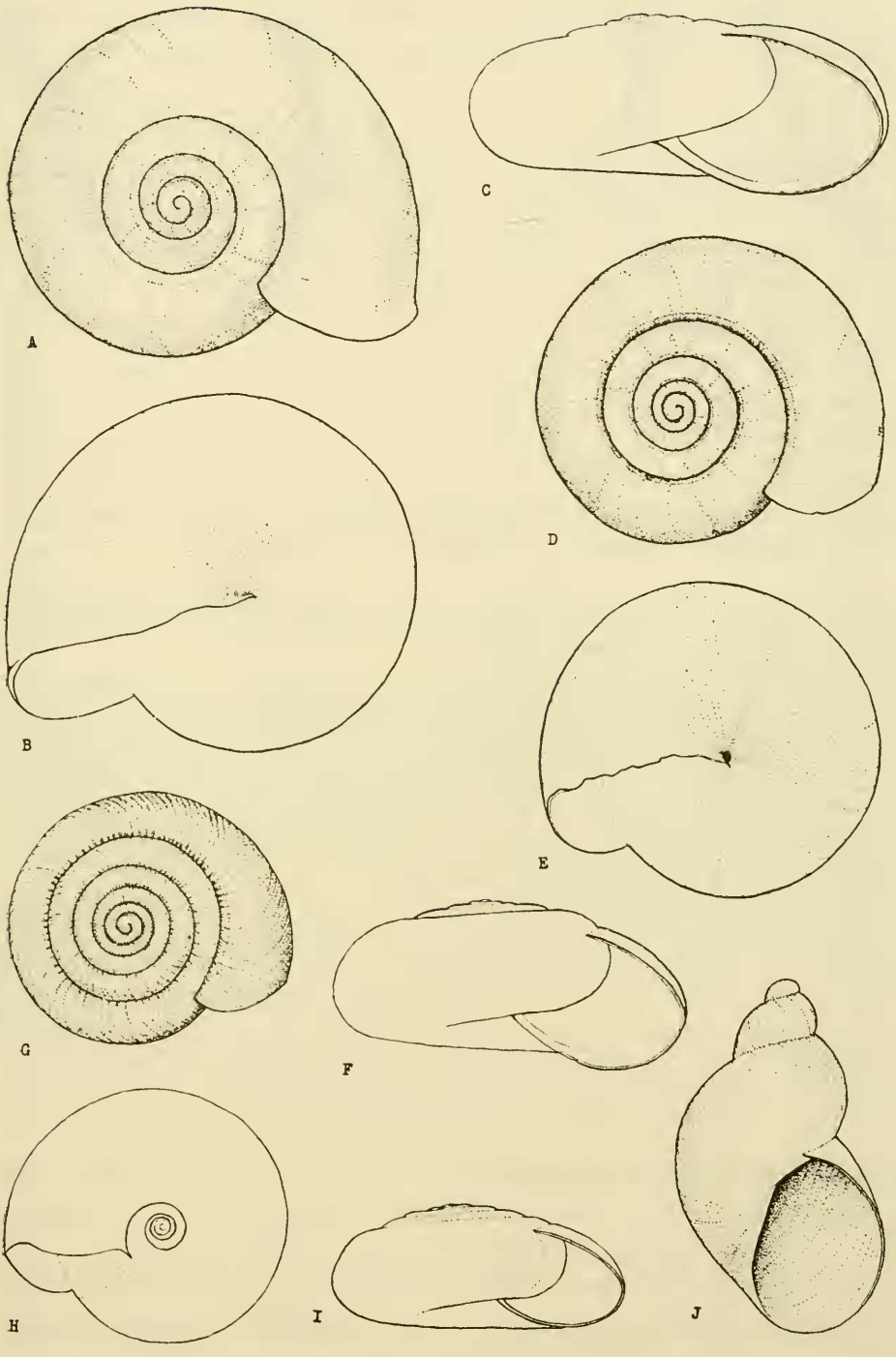


Figure 1: Holotypes. A-C, *Glyphyalinia rimula* Hubricht. D-F, *G. latebricola* Hubricht. G-I, *Paravitrea grimmi* Hubricht. J, *Catinella aprica* Hubricht. Drawings by Field Museum of Natural History.

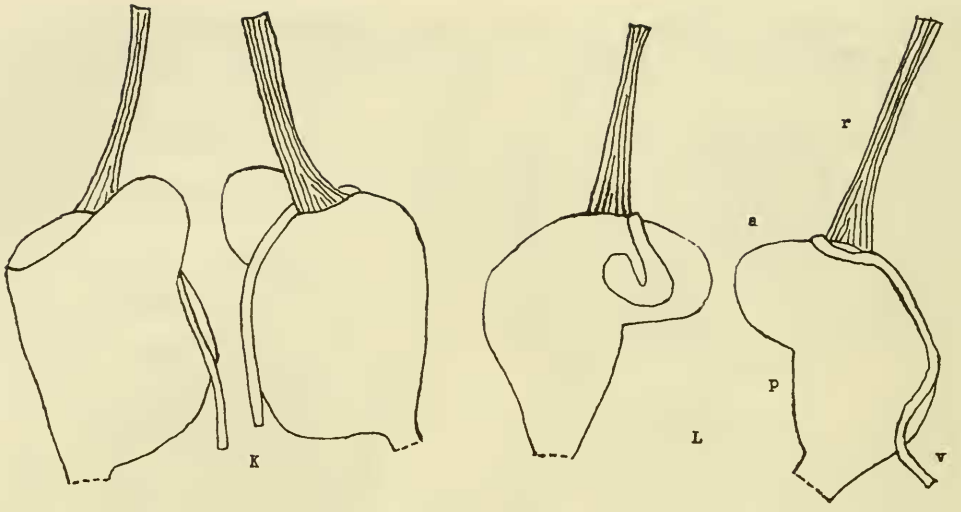


Figure 2: K-L. *Catinella aprica* Hubricht. Left and right views of two penises. p. penis. a. appendix. v. vas deferens. r. retractor.

author. Jackson Co.: in Doug Green Cave, 2 miles northwest of Swain (Stewart B. Peck, coll.).

*Glyphyalinia latebricola* is most closely related to *Glyphyalinia praecox* (H. B. Baker), differing in the much shorter "flagellum" of the penis; and in the stouter, distinctly bifurcated epiphallus. The shell is most likely to be confused with that of *Glyphyalinia cryptomphala* (Clapp). It has the same whitish color but the umbilicus is not completely covered.

*Glyphyalinia latebricola, G. rimula,* and *G. luticola* Hubricht represent a connecting series between *Glyphyalinia* s. s. and Section *Glyphognomon* H. B. Baker. The conspicuous differences which were present in the species known at the time *Glyphognomon* was described no longer exist, and *Glyphognomon* must be placed in the synonomy of *Glyphyalinia* s. s.

PARAVITREA GRIMMI, new species. Fig. 1, G-I.

Shell small, pale buff, subhyaline, shining; spire low, convex, with shallow sutures. Whorls 6 to 6.5 slowly increasing, last whorl increasing more rapidly. Periphery rounded, becoming somewhat flattened above near the aperture. Umbilicus deep, well-like, occupying about 17% of the diameter of immature shells but enlarging to about 23% in the last whorl of mature shells. Aperture somewhat oblique, lunate, wider than high, somewhat flattened on the base and above. Lip thin, simple. Sculpture of numerous irregularly spaced radial grooves and

growth wrinkles, distinct above but becoming obsolete on the base. Teeth absent at all stages of growth. Base flattened around the umbilicus.

Diameter 5.2 mm., height 2.4 mm., aperture width 2.2 mm., aperture height 1.7 mm., umbilicus 1.2 mm., 6 whorls. Holotype.

Animal pale slate colored. Penis clearly separable into a basal and apical section; basal section cylindrical, short and very stout; apical section attached to the side of the basal section at the distal end, very slender, a little less than one-half as long as the basal section. Retractor slender, about as long as the apical section of the penis. Epiphallus about four times as long as the penis and attached at the distal end of the apical section; a basal section about as long as the penis very slender, the rest about the same diameter as the apical section of the penis. Vagina about as long as the penis. Free oviduct very short. Spermatheca as long as the basal section of the penis and about as wide; duct about twice as long as the penis, rather slender.

*Distribution: Virginia:* Alleghany Co.: under leaves on a sparsely wooded limestone hillside near an old quarry, 9 miles north-northeast of Covington, holotype 156935 paratypes 156936 F.M.N.H., other paratypes 36263 collection of the author.

*Paravitrea grimmi* clearly differs from all other species for which the anatomy is known in its peculiar penis and in its very long epiphallus. The shell is most likely to be confused with that of *P. petrophila* (Bland) but the base is more flattened and the umbilicus enlarges more in the last whorl. From *P. blarina* Hubricht it differs in its larger size.

This species is named for F. Wayne Grimm who first found it.

*Paravitrea capsella lacteodens* (Pilsbry)

Pilsbry recorded three localities for this subspecies: the type locality, "Ramp Cove," Tuskeegee Mtn., Graham Co., North Carolina; Wetumpka, Alabama; and Rock Bluff, Liberty Co., Florida. Through the courtesy of Dr. R. Tucker Abbott I was able to examine these specimens. The specimen from Florida is a slightly immature *Paravitrea conecuhensis* (Clapp). The specimens from Wetumpka are of an undescribed species similar to *P. pilsbryana* (Clapp) but with a smaller umbilicus. The specimens of the type lot do not appear to be fully mature and do not look like a form of *P. capsella.* I tried to find the type locality but was unsuccessful. According to people who have lived all of their

lives at its base there are no ramps growing on Tuskeegee Mtn., hence no "Ramp Cove." I found typical *P. capsella* (Gould) at two places on Cheoah Mtn., which is the first mountain south of Tuskeegee Mtn., but did not find any *Paravitrea* on Tuskeegee Mtn. Until this subspecies can be found at the type locality and dissected its status will remain in doubt. It may be a form of *P. placentula* (Shuttleworth) or it may be a good species.

*Helicodiscus inermis* H. B. Baker

*Helicodiscus singleyanus inermis* H. B. Baker, 1929, Nautilus *42:* 86.

*Helicodiscus (Hebetodiscus) intermedius* Morrison, 1942, Bureau Amer. Ethnology Bull. 129, p. 378.

I could find no difference between topotypes of *H. intermedius* supplied to me by Dr. Morrison and specimens of *H. inermis.* He reported that *H. intermedius* occurred with *H. s. inermis* and was readily separable. However, specimens of the latter which he kindly sent to me for examination proved to be a mixture of *H. singleyanus* (Pilsbry) and *H. hadenoecus* Hubricht.

I found *H. inermis* associated with *H. singleyanus* in drift of the Guadaloupe and Pecos Rivers in Texas and in several Pleistocene deposits in the vicinity of St. Louis, Missouri and I could always separate them readily.

*Succinea barberi* (Marshall)

*Lymnaea barberi* Marshall, 1926, Proc. U. S. Nat. Mus. *68* (11) : 1-4. *L. aperta* Marshall, loc. cit.

*Succinea sanibelensis* Rehder, 1933, Nautilus *47:* 20.

*Oxyloma sanibelensis* (Rehder) , Pilsbry, 1948, Acad. Nat. Sci. Philadelphia, Mono. 3, vol. II, p. 793.

*O. barberi* (Marshall) , Taylor, D. W., 1966, Malacologia *4:* 114.

This species was collected in a salt-marsh on the south side of the causeway opposite Woody's Motel, 3 miles west of Bridgehead, Baldwin Co., Alabama. Upon dissection it was found to belong in the genus *Succinea* rather than in *Oxyloma* where it would appear to belong from the shell. The penis is rather long and slender with a large terminal loop.

CATINELLA APRICA, **new species.** Figs. 1 (J) & 2 (K-L) .

Shell small, thin, usually bright reddish-gold, translucent, shining. Whorls 3 to 3.5, well rounded, sutures deep, sculpture of unevenly spaced growth wrinkles. Aperture ovate, occupying about 50% of the length of the shell, outer and basal margins well

rounded. There is usually a slight angle at the junction of the columella with the parietal wall.

Height 6.3 mm., diameter 3.5 mm., aperture height 3.3 mm., aperture width 2.4 mm., 3.3 whorls. Holotype.

Mantle and sides of foot deep chocolate. Penis very short and broad; appendix short, about as broad as long, subapical; retractor about as long as the penis, slender, attached at the apex of the penis. Vas deferens entering the penis below the apex, inflated at point of entry, looping downward before turning upward and gradually narrowing to usually pass between the retractor and the appendix. Spermatheca large, globose, duct rather long, slender. Prostate gland large, oval but somewhat distorted by pressure of surrounding organs. Hermaphrodite duct usually well pigmented. Talon very dark, club-shaped with a terminal notch.

*Distribution: Alabama:* Washington Co.: cedar glade, 1.5 miles north of St. Stephens, holotype 156933 and paratypes 156934 F.M.N.H., other paratypes 34410 collection of the author. Clarke Co.: cedar glade, 2 miles south of Suggsville. Sumter Co.: cedar glade, 4.5 miles northeast of Livingston. *Mississippi:* Clay Co.: Selma Chalk, 0.6 miles west of Trebloc; Selma Chalk, 3.5 miles south of McCondy. Oktibbaha Co.: cedar glade, 1.0 mile southwest of Osborn. Kemper Co.: roadside, 3.8 miles northwest of Scooba. Jasper Co.: roadside, 2.5 miles southwest of Rose Hill.

*Catinella aprica* is most closely related to *Catinella oklahomarum* (Webb); differing in the smaller, more brightly colored shell with proportionately longer spire. Anatomically it differs in the usually shorter and broader appendix on the penis. The anatomical differences are not absolute, as there is some intergradation. As in some species of *Succinea,* the shell must be relied upon for specific identification. The shell of *C. oklahomarum* is larger with a shorter spire and larger aperture and the color is more greenish. The habitat of the two species is quite different. *C. oklahomarum* is a woodland species, found usually in pine or oak woods which are usually somewhat acid; and specimens are usually few in numbers. *C. aprica* is a sun-loving calciphile, which when found is usually abundant.

Most references in the literature to the habitat of Succineidae state that they are found in marshes, near bodies of water, and

in other wet places. While this may be true for *Oxyloma* it is certainly not true for some species of *Succinea* and *Catinella.* These genera contain some of the most xerophilous land snails known from the eastern United States.

## THIRTY-FOURTH ANNUAL MEETING OF THE AMERICAN MALACOLOGICAL UNION

By MARGARET C. TESKEY, AMU. Secretary

Hosted by six Texas shell clubs, the American Malacological Union held its thirty-fourth annual meeting July 15 to 19, 1968, in Corpus Christi, Texas. President Arthur H. Clarke, Jr. presided over the following papers:

Activities of *Strophocheilus oblongus.* Ozro B. Wiswell. Some physiological aspects of *Strophocheilus oblongus.* Ozro B. Wiswell. Studies on the distribution of presumed hemaglobin in bivalve Mollusca. Harold W. Harry. Small beginnings. Adlai B. Wheel, Sr. Larval development of the commensal bivalve *Montacuta percompressa.* Paul Chanley. Density and distribution of the ocean quahog. Arthur S. Merrill and John W. Ropes. Establishment of a trematode cycle in *Tarebia granifera* (Lamarck) in Texas. Harold D. Murray. Studies in the life history of the naiad *Amblema plicata* (Say, 1817). Carol B. Stein. Formation, regeneration, pigmentation and luminosity. Mrs. C. J. Siekman. Observations on western Atlantic Caecidae. Donald R. Moore. Mollusks of Project Hourglass. William G. Lyons. Notes on Periplomatidae (Pelecypoda, Anomalodesmata). Joseph Rosewater.

Symposium on rare and endangered North American mollusks. Atlantic, Caribbean and Gulf of Mexico marine mollusks. R. Tucker Abbott. [Discussant: Kenneth J. Boss.] Pacific marine mollusks. A. Myra Keen. [Discussant: William K. Emerson.] Brackish-water mollusks. J. P. E. Morrison. Eastern freshwater mollusks (1). David H. Stansbery. Eastern freshwater mollusks (2). William H. Heard. [Discussants: H. D. Athearn, A. H. Clarke.] Western freshwater mollusks. Dwight W. Taylor. Eastern land snails. William J. Clench. [Discussant: Dee S. Dundee.] Western land snails. Allyn G. Smith. [Discussant: Joseph C. Bequaert.]

Abundance, local variation and brood pouch formation in